



Pyramid's Auto-Print/Apply Controller automatically prints and applies GS1 compliance labels for shipping at a peak rate of 200 cartons-per-minute.



APPLICATION BRIEF

Multi-Brand Store, E-Commerce Retailer



Pyramid's cutting-edge, high-performance print/apply labeling system for store deliveries and e-commerce fulfillment improves outbound supply chain.

The Application

A leading retailer of lingerie, personal care and beauty products, apparel and accessories conducted an enterprise-wide study of its DC operations in an effort to make significant improvements in post-packing to shipping processes. Although such an exercise is common today, this company initiated their study in 1996. Findings included the need to introduce compliance labeling within the outbound supply chain, and to automate shipping label printing and application to achieve:

- Higher productivity levels
- Improved ship-to-store service
- Lower labeling error rate
- Higher overall throughput
- Open supply chain transparency based upon GS1 (www.gs1.org) standards

The company returned to Pyramid to design, develop, implement—and periodically upgrade—an automatic carton label print/apply system, compliant with GS1 standards, for its personal care products division. The system also had to perform e-commerce fulfillment and full-case store distribution on-the-fly (via cross-docking).

Installation Scope

Pyramid Director WCS integrates with WMS and the Pyramid Controller Series (control hardware and software) to supervise and direct seven different auto-print/apply implementations operating in parallel over seven facilities. Each installation:

- » **Includes 1–4 lines:** Each line equipped with 2–3 printer/applifier machines
- » **Produces Standard GS1 Compliance Labels:** Including 4 x 6-inch and low-profile 3 x 8-inch sizes
- » **Achieves Peak Rates:** 50 cases-per-minute per-line, based upon a uniform 30-inch lead-edge to lead-edge pitch, with a minimum 6-inch inter-case gap
- » **Tracks and Controls:** Continuous, robust case tracking and control from the point of induction through each case's exit from the system
- » **Monitors and Reports:** Full process monitoring, diagnostics and operating performance statistical reporting

The Challenge

In 1996, label print/apply technology had not advanced to today's sophistication. At that time, no complete, integrated solutions existed—combining the material handling equipment (MHE), controls, automatic identification (auto-ID) technologies and printer/applicator machines with a warehouse control system (WCS)—that could interface with the facility's warehouse management system (WMS).

In addition, the retail industry was at the outset of adopting GS1 standards. There was a steep learning curve relative to the proper application of the standards within this company's business. Further, the transition from the legacy marking and coding system to the new GS1 standard posed a logistically and technically complex process.

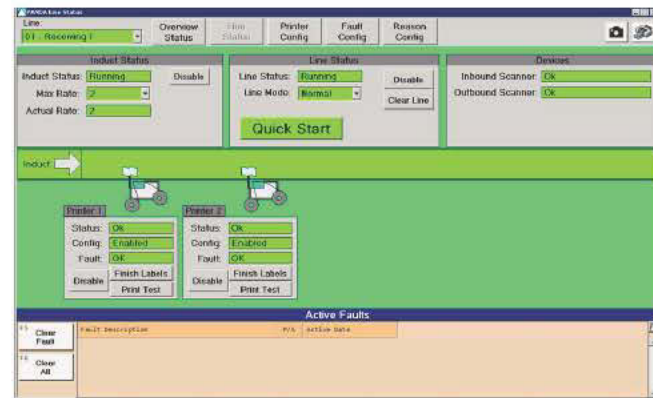
The Solution: Pyramid Director WCS and Pyramid Controller Software Suite of Control Hardware and Pre-Engineered Software for MHE

Pyramid worked with the customer, labeling industry leaders and GS1 U.S. (formerly the Uniform Code Council) to develop the label design and create a print/apply technology that could support the project's requirements, including label application at a rate of 50 cases-per-minute per-line, on a fixed 30-inch pitch and utilizing both a standard 4 x 6-inch label and a low-profile 3 x 8-inch compliance label format.

With the core print/apply technology hurdles overcome, Pyramid expanded its Director WCS suite of software products to include auto-print/apply, and then bundled these with the Pyramid Controller Series' (control hardware and software) Auto-Print/Apply Controller, auto-ID and WMS interface as a packaged solution.

The first system went into operation in 1997, exceeded the company's initial expectations, and eclipsed all performance metrics relative to speed/throughput, accuracy, repeatability, reliability and more. Still in production operation today, the system boasts a capacity of 200 cases-per-minute, and receives ongoing updates with Pyramid's latest versions of Director WCS and Controller Series products. The company has since expanded its use of Pyramid solutions to include all its retail case labeling applications across seven different distribution and consolidation facilities.

Pyramid provides controls and software to manage and direct automated distribution systems more intelligently. Our solutions optimize unloading, receipt of product, flow, storage, retrieval, picking, sorting, order processing, packaging, labeling and shipment of inventory—then properly integrate those processes at all points with information systems, including warehouse management systems (WMS), enterprise resource planning (ERP), transportation management systems (TMS) and more.



Director WCS continuously monitors the print/apply process from the first point of scan through final outbound verification.



Director WCS supports various configuration options to meet the specific needs and requirements of each application.



DIRECTOR WCS provides a comprehensive suite of simple, easy-to-use graphical screens for management and users, as well as a central control dashboard. All screens are customized to provide:

- 1) Real-time visibility into all operational activity.
- 2) Direct control of inventory flow through the DC by wave, case, article, shipping carton and more.

Views include process status, performance metrics, exception reporting, inventory status and location, MHE status and performance, communications status and statistics, configurable security, parametric and diagnostic portals, and up-to-the-minute information about vital aspects of the print/apply operation.

Key Functional Highlights

Each of the seven auto-print/apply systems is associated with a different operating division of the company, and operates independently. All divisions share a common compliance label framework that conforms to the GS1 standard, but each has its own unique marking and labeling requirements and its own WMS.

Pyramid Director WCS supports each division's different Manhattan Associates' WMS interface, utilizing Manhattan's native Ethernet TCP/IP sockets and FTP standards to exchange information:

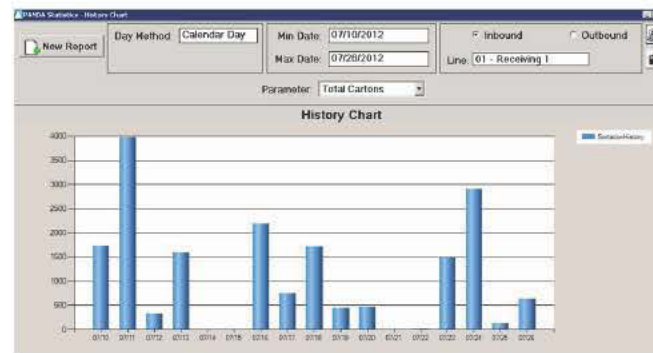
- Downloads of variable data required for populating the preformatted GS1-compliant label templates by store.
- Downloads of full case distribution requirements by store (depending on the retail application).
- Uploads of print/apply case level activity for tracking/tracing of all outbound inventory from warehouse to store.

Changes to label templates, fields and mapped data can be easily performed by Pyramid to accommodate modifications in customer requirements as needed.

Director WCS interfaces with the label print/apply machines (in this application ID Technology's Series 250, equipped with Sato print engines, in all seven facilities) to download label templates and variable store data on a per case basis. The WCS also has advanced print/apply machine configuration and diagnostics.



Director WCS has advanced diagnostic capabilities that are critical for successful maintenance and operation of an automatic print/apply system.



Director WCS offers statistical, graphic reporting of key operating metrics.

Pyramid—along with Holjeron, Lightning Pick and Matthews Marking Systems—is a part of Matthews Automation Solutions. Together, the brands provide streamlined, automated solutions that boost material handling productivity, accuracy and cost efficiency throughout your global operation. Manufacturers, suppliers and distributors worldwide rely on these integrated systems to identify, track, control and pick products at the highest levels of accuracy and throughput.



The Auto-Print/Apply Controller regulates case flow into, through, and out of the print/apply operation, and coordinates the timing of print/apply functions on a per case basis. To accomplish this, the Auto-Print/Apply Controller supports the following real-time interfaces to:

- The MHE for case induction motion control, precision alignment, uniform inter-case pitch and transportation.
- Field instrumentation so cases can be accurately sensed and continuously tracked through the entire print/apply operation; MHE controlled by operations personnel; and MHE status indicated visually and audibly.
- Auto-ID via bar code scanners for automatic identification of cases as they enter and depart the label-print/apply operation.
- Director WCS to report case arrival, identification and MHE status, and to receive commands relative to the operation of MHE.
- The print/apply machines to trigger printing and precision application of the compliance label to the case with a high degree of repeatability—with high grade bar code and text production.

Labels are applied to each case's side (front lead-edge), as required by customer's internal standards. Should their orientation requirements change, Pyramid can also implement front, back or top application.

All lines are equipped with multiple forms of bar code scanner configurations, including inbound case ID capture and outbound case ID verification. Pyramid implemented DataLogic scanners to comply with the customer's internal auto-ID facilities services standards.

To ensure productivity, the system enables printing of test labels by printer/applicator machine, sensing of low label conditions, selective enabling or disabling of printer/applicator machines (including automatic adjustment of induction rates), ability to selectively exhaust a specific print/applicator machines residual stock, and other advanced features.

Printer Name	Printer Status	Printer Config	Fault Config	Reason Config
Printer 1	Running	Config 1	Config 1	Config 1
Printer 2	Running	Config 2	Config 2	Config 2
Printer 3	Running	Config 3	Config 3	Config 3
Printer 4	Running	Config 4	Config 4	Config 4
Printer 5	Running	Config 5	Config 5	Config 5
Printer 6	Running	Config 6	Config 6	Config 6
Printer 7	Running	Config 7	Config 7	Config 7
Printer 8	Running	Config 8	Config 8	Config 8
Printer 9	Running	Config 9	Config 9	Config 9
Printer 10	Running	Config 10	Config 10	Config 10

Director WCS provides up-to-the-second, complete information about the status of print/apply operations.



Pyramid's Auto-Print/Apply Controller handles a continuous flow of shipping cartons at a single line peak rate of 50 cartons-per-minute per line.